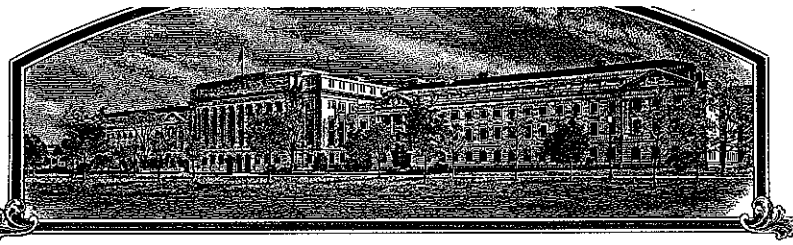

No. 200500101

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Georgia Research Foundation, Inc. (UGARF)

and Grasslanz Technology Limited, New Zealand

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC [illegible]LENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE [illegible] TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR [illegible]NG IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE [illegible]POSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PR[illegible] THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CLOVER, WHITE

'Resolute'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-fifth day of February, in the year two thousand and eight.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
University of Georgia Research Foundation, Inc. (UGARF) and Grasslanz Technology Limited, New Zealand

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
GA 21160,GC137

3. VARIETY NAME
Resolute

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
Room 630 Boyd Graduate Studies Bldg.
University of Georgia
Athens, GA 30602

5. TELEPHONE *(Include area code)*
(706) 542-5944

6. FAX *(Include area code)*
(706) 542-3837

FOR OFFICIAL USE ONLY
PVPO NUMBER
20050010 1

FILING DATE
JANUARY 26, 2005

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Corporation

8. IF INCORPORATED, GIVE STATE OF INCORPORATION
GA

9. DATE OF INCORPORATION
November 17, 1978

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
John Ingle
University of Georgia Research Foundation, Inc.
Room 630 Boyd Graduate Studies Bldg.
University of Georgia
Athens, GA 30602

FEES RECEIVED
FILING AND EXAMINATION FEES:
$ 3,652.00
DATE 1/26/05
CERTIFICATION FEE:
$ 768.00
DATE 1/8/08

11. TELEPHONE *(Include area code)*
(706) 542-5944

12. FAX *(Include area code)*
(706) 542-3837

13. E-MAIL
kmb@ovpr.uga.edu

14. CROP KIND *(Common Name)*
White Clover

16. FAMILY NAME *(Botanical)*
Fabaceae

15. GENUS AND SPECIES NAME OF CROP
Trifoluim repens L.

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☑ NO

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? *(OPTIONAL)*
☐ YES ☑ NO
IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERICALIZATION. _____

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
(Follow instructions on reverse)

a. ☑ Exhibit A. Origin and Breeding History of the Variety
b. ☑ Exhibit B. Statement of Distinctness
c. ☑ Exhibit C. Objective Description of Variety
d. ☐ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☑ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☑ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☑ Filing and Examination Fee ($3,652), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
☐ YES *(If "yes", answer items 21 and 22 below)* ☑ NO *(If "no", go to item 23)*

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☐ YES ☐ NO
IF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☐ YES ☑ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☑ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
Gordhan L. Patel			
NAME *(Please print or type)*		NAME *(Please print or type)*	
Gordhan L. Patel			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Executive Vice President	2011/05		

(See reverse for instructions and information collection burden statement)

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable *(in the sense that it will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for $3,652 ($432 filing fee and $3,220 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvpindex.htm

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To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 http://www.ams.usda.gov/lsg/seed.htm.

ITEM

19a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

20. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

23. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

24. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

22. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

23. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

24. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

Revised 30 November 2007

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WHITE CLOVER
'Resolute'

19A. Origin and Breeding History of the Variety

Resolute is a medium-small leaved synthetic cultivar derived from bulked seed collected directly from persistent ecotypes found in a pasture near Tallapoosa, Georgia, USA. The parentage of these ecotypes is unknown, but all were found to be exclusively stolon dense, intermediate leaf types *(T. repens* f. *hollandicum* Erith ex Jav. & Soo*)* as defined by Fick and Luckow (1991). As intermediate types, they may have actually come in with early settlers from Europe (late 1700s) or may have been planted as late as the 1930's and 1940's. It is simply impossible to tell. The best we can do here would be to label these as "Dutch White" as it would be the best general estimation on our part.

These ecotypes were exhibiting persistence under grazing and summer-drought and heat stress in the Tallapoosa location. This ecotype derived bulk seed was then re-selected in New Zealand by recurrent phenotypic selection for resistance to alfalfa mosaic virus (AlMV) and white clover mosaic virus (WClMV), enhanced seed yield, and more uniform flowering pattern. The final re-selected plants were then inter-mated to produce the synthetic (Syn 1 generation) of the cultivar 'Resolute'.

'Resolute' was stable and uniform through four generations of certified seed multiplication in New Zealand. There were no variants observed for stolon diameter, leaf width, and flowering pattern (Table 1; Figure 1). No off-types were recorded during these same evaluations.

References

Fick, G.W., and M.A. Luckow. 1991. What we need to know about scientific names: An example with white clover. J. Agron. Educ. 20:141–147.

Table 1. Stolon diameter and leaf width comparisons among four generations of 'Resolute' white clover when tested near Christchurch, New Zealand in 2007.

Id #	Generation	No. Plants	Stolon Diameter (mm)	Leaf Width (mm)
C21160	Pre-breeder (Syn 1)	50	2.47	18.71
C23783	Breeder (Syn 2)	50	2.43	18.23
C24195	Foundation (Syn 3)	49	2.50	18.07
C24329	Certified (Syn 4)	50	2.46	18.13
	L.S.D. ($p<0.05$)		NS	NS

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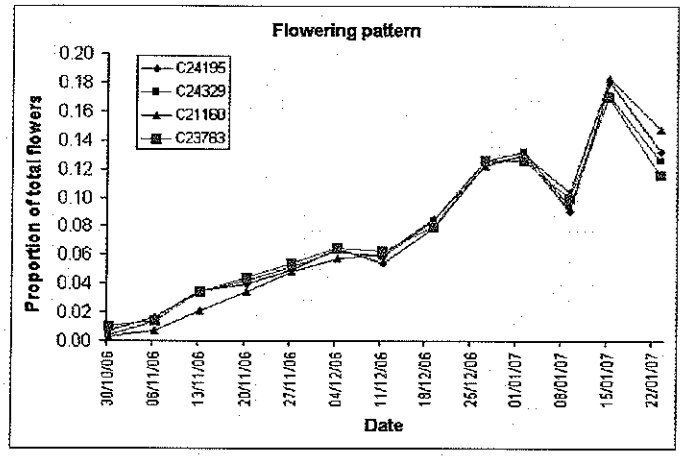

Figure 1. Flowering pattern of 4 generations of 'Resolute' white clover in Christchurch, New Zealand.

Revised 30 November 2007

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WHITE CLOVER
'Resolute'

19B. Statement of Distinctness

'Resolute' is most similar to 'Durana', 'Patriot', and 'Louisiana S-1'. 'Resolute' differs from Louisiana S-1' in being shorter in plant height and possessing smaller leaves and shorter petioles (Table 2). 'Resolute' differs from 'Durana' in spreading less (less plant width and length), having longer and wider leaves with longer petioles (Table 2), and a lower % of cyanogenesis (HCN producing) plants (Table 3). 'Resolute' differs from 'Patriot' by being shorter in plant height and possessing shorter leaf petioles (Table 2). Analysis based on allele size 210 of microsatellite ats113 also showed distinctness for 'Resolute' that differed from both 'Durana' and 'Patriot' (Figures 2; and information in "Molecular Marker" section below). 'Resolute' differs from 'Regal' in possessing a higher percentage of cyanogenesis (HCN producing) plants (Table 3). 'Resolute' is also shorter in plant height and possesses smaller leaves and shorter petioles than 'Regal' (Table 2).

Table 2. Characteristics of 'Resolute' white clover when compared to Durana, Patriot, Regal, and Louisiana S-1 at two sites (separate experimental areas at the same location but containing different soil types) near Eatonton, GA (USA). Number of reps (plants) per site = 50.

Entry	Plant Length	Plant Width	Plant Height	Petiole Length	Leaf Length	Leaf Width
	----------cm----------			----------mm----------		
Site 1 (Davidson sandy loam soil):						
Durana	36.0	41.0	10.9	31	13	10
Resolute	34.0	33.5	9.7	44	15	12
Patriot	33.5	34.0	12.9	50	17	13
Regal	31.5	29.4	18.3	75	25	18
Louisiana S-1	30.5	34.5	15.5	62	21	15
LSD (5%)	4.1	2.1	2.2	15	2	2
Site 2 (Cecil clay loam soil):						
Durana	37.3	32.7	8.7	32	13	10
Resolute	33.0	30.5	8.3	39	13	11
Patriot	36.0	28.5	14.0	47	17	12
Regal	35.0	29.0	18.4	68	22	15
Louisiana S-1	33.0	29.5	14.2	58	18	14
LSD (5%)	3.6	1.6	2.3	4	2	1
Data Pooled for Both Sites:						
Durana	37.0	34.8	9.3	32	13	10
Resolute	33.5	32.0	9.0	42	14	11
Patriot	34.8	31.3	13.4	49	17	12
Regal	33.0	29.0	18.4	72	23	17
Louisiana S-1	31.8	32.0	14.8	60	19	14
LSD (5%)	3.5	2.8	1.5	8	1	1

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Table 3. Percentage of cyanogenesis (HCN producing) plants* for 'Resolute' white clover grown near Watkinsville, GA, USA, Eatonton, GA, USA, and Palmerston North, New Zealand and compared against 'Durana' and 'Patriot' white clover. Number of reps (plants) per location = 60.

Variety	Watkinsville, GA, USA	Eatonton, GA, USA	Palmerston North, New Zealand
	% of Plants Producing HCN		
Resolute	56	59	58
Durana	79	84	85
Patriot	49	42	58
Ladino Check**	8	10	10
LSD ($p<0.05$)	10	20	ND

*Analyzed via picric acid test using procedures from Corkill, L. 1940. Cyanogenesis in white clover (Trifolium repens L.). Cyanogenesis in single plants. New Zealand J. Sci. Tech. 22: 65-67B.

** Ladino cultivar used at Watkinsville and Eatonton was Regal while at Palmerston North the check was 'Tillman'.

Molecular Markers:

Methods

DNA of twelve individuals grown from nucleus seed of each variety was purified and tested with an array of eight microsatellite markers. Data were collected in a manner consistent with published procedures (Barrett et al. 2004) and are not confidential. All markers were labelled with VIC flourophor for detection in an ABI3100 genetic analyser using LIZ500 size standard on a 22 centimetre array filled with POP7 polymer.

The Chi-square statistic was used to test if the frequency of an allele was significantly different between Resolute versus Patriot, and between Resolute versus Durana. The calculation was made in the most conservative way. Specifically, the allele frequency recorded in Resolute was used as the 'expected' component of the statistic calculation, the frequency recorded in the other 2 varieties was used as the 'observed' component. For the allele in question, 12 observations were made in each of the variety samples (i.e. there was no missing data for this marker).

Results

Eight microsatellite markers were used to test the 12 individuals of each variety sample, resulting in a data grid with 83 alleles scored among the 36 individuals, resulting in a total of 2988 datapoints of which only 1.5% were missing. The dataset was examined to identify a simple and robust way to statistically distinguish Resolute from the other two varieties. Microsatellite ats113 is a publicly available white clover marker. Allele size 210 of microsatellite ats113 showed a significant ($p<0.05$) difference in frequency distribution among the three variety

20050101

samples, being present in 25% (3 of 12) of the Resolute individuals sampled, and 0% (0 of 12) of the Patriot and Durana individuals sampled. This marker is diagnostic to declare if a sample of seed is a potential match to either Resolute nucleus seed, Patriot nucleus seed, or Durana nucleus seed, and is in itself sufficient to distinguish Resolute from the other two varieties nucleus seed lots at a >95% probability. A trace of typical allele profiles for ats113 in the samples is included, showing a case where the allele is present in a Resolute genotype and absent in both the Patriot genotype and in the Durana genotype. While it is possible this allele may be unique to Resolute and absent from both Patriot and Durana, a larger dataset would be required to test this possibility.

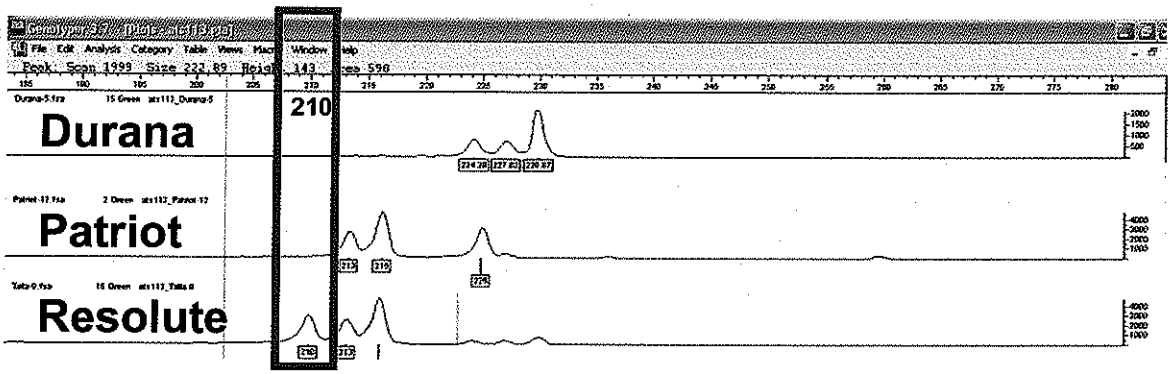

Figure 2. DNA trace showing microsatellite ats113 allele 210 which occurs at a significantly ($p<0.05$) higher frequency in Resolute than either Patriot or Durana.

Notes:

1. The experimental design or procedures followed are published in a peer reviewed journal and cited.

Procedures were consistent with those published in

Barrett B, Griffiths A, Schreiber M, Ellison N, Mercer C, Bouton J, Ong B, Forster J, Sawbridge T, Spangenberg G, Bryan G, and D Woodfield (2004) A microsatellite map of white clover. *Theoretical and Applied Genetics* 109:596-608.

Cochran, WG. (1952) The X^2 test for goodness of fit. Annals of Mathematical Statistics 23:315-345

2. No Part of the experimental design or procedures are confidential.

All procedures are publicly available as published in

Barrett B, Griffiths A, Schreiber M, Ellison N, Mercer C, Bouton J, Ong B, Forster J, Sawbridge T, Spangenberg G, Bryan G, and D Woodfield (2004) A microsatellite map of white clover. *Theoretical and Applied Genetics* 109:596-608.

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3. The specific differentiating bands are cited.

As per this report, microsatellite marker ats113 allele size 210 nucleotides in length as assayed.

4. Photographic copies of scientific publishable quality with sufficient resolution and labelling to resolve the individual bands in question.

As per this report, Figure 2.

5. If the procedure is not well established and accepted, the results are from a[t] least two independent laboratories with the experimental design found to be reliable.

Microsatellites (SSRs) are an industry standard DNA marker technology.

Revised 19 March 2007

REPRODUCE LOCALLY. Include form number and date on all reproductions. Form Approved OMB NO 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
WHITE CLOVER *(Trifolium repens L.)*

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
University of Georgia Research Foundation, Inc. and Grasslanz Technology Limited, New Zealand	GA21160, GC137	Resolute

ADDRESS (Street and No. or RD No., City, State, Zip Code and Country)

Robert Fincher
University of Georgia Research Foundation, Inc.
630 Boyd Graduate Studies Research Center
Athens, GA 30602-7411

[redacted]

PVPO NUMBER

200500101

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (i.e. 0 9 or 0 9) when the number is either 99 or less or 9 or less. Characteristics described, including numerical measurements, should represent those which are typical of the variety. Measured data should be for spaced plants. Any recognized color fan, e.g. Royal Horticultural Colour Chart, may be used to determine plant color; designate system used: N/A. Give location of test area Eatonton, GA USA. Ranges of values are valuable and may be included with additional description elsewhere in the application.

Note: For single plant data a minimum of 100 plants is suggested.

1. Type:

[2] 1 = Small 2 = Intermediate 3 = Large (Ladino) 4 = Other (Specify) _____

STANDARD VARIETIES
1 = Louisiana S-1 2 = Regal 3 = Pilgrim 4 = Merit

2. MATURITY:

[1 0 0] % Plants flowering in seedling year

Time of flower (50% of plants in bloom): (from spring growth in non-seedling year)

[0 4] Days Earlier Than [2] Standard Variety
[0 0] Days Later Than [1] Standard Variety

3. GROWTH HABIT:

[1] 1 = Prostrate (Grasslands Huia) 2 = Erect (Regal)
[2] 1 = Lax (Regal) 2 = Dense (Grasslands Huia)

Plant Height (from soil level to top of flowering head at 50% flowering):

[0 9] cm Tall
[0 9] cm Shorter Than [2] Standard Variety
[0 5] cm Shorter Than [1] Standard Variety

Plant Width (average of 2 horizontal measurements of leaf spread at top of plant at 50% flowering of 2nd year):

[3 3] cm Wide
[0 0] cm Narrower Than [1] Standard Variety
[0 2] cm Wider Than [2] Standard Variety

4. LEAF: (Central leaflet of 3rd leaf from tip of rapidly growing stolon – usually in summer months)

[0 5 8] % plants cyanophoric (Pacric Acid Test)

[1 1] mm Leaflet Width — [0 6] mm Narrower Than — [2] Standard Variety; [0 3] mm ~~Wider~~ Narrower Than — [1] Standard Variety

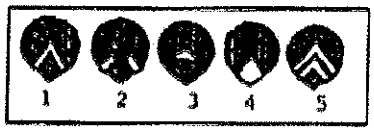
[1 4] mm Leaflet Length — [0 9] mm Shorter Than — [2] Standard Variety; [0 9] mm ~~Longer~~ Shorter Than — [1] Standard Variety

[ ] Not Determined [ ] mm Petiole Width — [ ] mm Narrower Than — [ ] Standard Variety; [ ] mm Wider Than — [ ] Standard Variety

[4 2] mm Petiole Length — [3 0] mm Shorter Than — [2] Standard Variety; [1 8] mm ~~Longer~~ Shorter Than — [1] Standard Variety

[2] Color: 1 = Light Green (Regal) 2 = Medium Green (Merit) 3 = Dark Green (S-184) 4 = Other (Specify) _____

White Leaf Marking (at 50% flowering: Note categories below allow for increasingly detailed description of the same data.
The diagram illustrates the terms: 1 = Full V 2 = Broken V 3 = V-point 4 = Filled V 5 = Double V



Presence of mark: Of total plants, give percentage of marked and unmarked plants (Total = 100%)

[0 1 0] % Absent [0 9 0] % Marked

Presence of mark: of total plants, give percentage having each shape (Total = % marked above)

[0 8 7] % Full V [0 0 3] % Broken V [ ] % V-point

[ ] % Filled V [ ] % Double V [ ] % Other (Specify) _____

Anthocyanic (Red) Leaf Marking (Some leaves of plants examined should have developed at temperatures of 10° C or less):
Of total plants give percentage marked (red flecking, red midrib, or red leaf) and unmarked (Total = 100%)

[0 7 0] % Absent [0 3 0] % Marked

5. STOLON: (Give widest diameter of stolon at point of attachment of leaf measured above 3rd node from tip)

[ ] Not determined [ ] mm Diameter — [ ] mm Narrower Than — [ ] Standard Variety; [ ] mm Wider Than — [ ] Standard Variety

6. FLOWERING HEAD: (at 50% flowering of variety)

[2 9] Heads/Plant — [1 2] no. Greater Than — [2] Standard Variety; [0 2] no. ~~Fewer~~ Greater Than — [1] Standard Variety

7. DISEASE AND PEST RESISTANCE: (0 = Not Tested 1 = Susceptible 2 = Resistant)
If variety is claimed to be resistant or to show intermediate reaction, substantiating test scores should be attached clearly identifying disease, application variety, check varieties, location of test and range and direction of test scores.

A. Stolon and Root Rots
- [0] *Fusarium spp*
- [0] *Rhizoctonia spp*
- [0] *Colletorichum spp*
- [0] *Leptodiscus spp*
- [0] *Cervularia spp*
- [0] *Sclerotium rolfsii*
- [0] *Sclerotium trifoliorium*

B. Viruses
- [0] Alfalfa Mosaic
- [0] White clover mosaic
- [0] Clover yellow mosaic
- [0] Clover yellow vein mosaic
- [0] Red clover vein mosaic
- [0] Peanut stunt
- [0] Other (Specify) _____

C. Nematodes
- [0] Root knot
- [0] Sting
- [0] Meadow
- [0] Clover cyst

D. Insects
- [0] Lygus bugs (*Lygus spp*)
- [0] Spider mites (*Tetranychus spp*)
- [0] Clover seed weevil (*Miccotrogus picirostris*)
- [0] Ladino clover seed midge (*Dasineura gentneri*)
- [0] Clover head weevil (*Hypera meles*)
- [0] Clover leaf weevil (*H. punctata*)
- [0] Lesser clover leaf weevil (*H. nigrirostris*)
- [0] Alfalfa weevil (*H. postica*)
- [0] Meadow spittle bugs (*Philaenus spumarius*)
- [0] Clover root curculio (*Sitonia hispidula*)
- [0] Potato leafhopper (*Empoasca fabae*)
- [0] Other (Specify) _____

8. Indicate the variety most closely resembling the application variety for the following:

CHARACTER	VARIETY	CHARACTER	VARIETY
Leaflet shape	Louisiana S-1, Durana	Seed color	Louisiana S-1, Durana
Cutting recovery	Louisiana S-1, Durana	Late season growth	Durana
Winter hardiness	Louisiana S-1, Durana	Persistence	Durana

Brewbaker, J. L. and H. L. Carnahan. 1958. Leaf marking alleles in white clover. Uniform nomenclature. Journ. Heredity 47:103-104

Hawkins, R. P 1959. Botanical characters for the classification and identification of varieties of white clover. J. Nat. Inst. Agr. Bot. 8:675-682.

I.S.T.A. (Herbage) Variety Committee, 1972. Draft paper on tests for identification and trueness to cultivar. Proc. Int. seed Test. Assoc. 37:443-495

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued *(7 U.S.C. 2421)*. The information is held confidential until the certificate is issued *(7 U.S.C. 2426)*.

1. NAME OF APPLICANT(S)
University of Gerogia Research Foundation, Inc. (UGARF) and Grasslanz Technology Limited, New Zealand

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER
GA 21160, GC137

3. VARIETY NAME
Resolute

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*
Room 630 Boyd Graduate Studies Bldg.
ATTN: John Ingle
University of Georgia
Athens, GA 30602

5. TELEPHONE *(Include area code)*
(706) 542-5944

6. FAX *(Include area code)*
(706) 542-3837

7. PVPO NUMBER
200500101

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.** [X] YES [X] NO
UGARF Grasslanz

10. Is the applicant the original owner? [ ] YES [XX] NO **If no, please answer one of the following:**
UGARF

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
[X] YES [ ] NO **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
[ ] YES [ ] NO **If no, give name of country**

Grasslanz -- Please see attached statement

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:
See attached.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

Revised 19 March 2007

200500101

WHITE CLOVER
'Resolute'

19E. Statement of the Basis of the Owner's Ownership (Addendum)

The variety for which plant variety protection is herby sought is owned jointly by the University of Georgia Research Foundation, Inc. (UGARF) and Grasslanz Technology Limited (Grasslanz), a New Zealand Corporation.

Ownership by UGARF is based on the Patent Policy approved by the Board of Regents of the University System of Georgia on June 9, 1982, in which the Board of Regents assigned to UGARF all rights in intellectual property developed or created by employees at the University of Georgia, one of the Universities of the University System of Georgia. Rights to novel plant varieties developed at the University of Georgia, including 'Resolute' white clover, are covered by said Patent Policy. As an employee of the University of Georgia, Joseph H. Bouton, pursuant to said Patent Policy, has assigned his rights in 'Resolute' to UGARF.

Grasslanz is a wholly owned subsidiary company of AgResearch Limited (AgRes), a New Zealand Corporation, and is an Incorporated Company (No. 1368159) in New Zealand under the New Zealand Companies Act 1993. On 1 July 2004, AgRes assigned to Grasslanz all rights to their Plant Variety Rights property as per a Sale and Purchase Agreement between the two parties. Derek Woodfield is an employee of AgRes and has therefore assigned his rights to 'Resolute' to Grasslanz.